RAW SEQUENCE LISTING

The Biotechnology Systems Branch of the Scientific and Technical Information Center (STIC) no errors detected.

Application Serial Number: _____ 10/807, 755A _____
Source: _____ TFWO _____
Date Processed by STIC: _____ 11/09/2006 _____

ENTERED

RAW SEQUENCE LISTING   DATE: 11/09/2006
PATENT APPLICATION: **US/10/807,755A**   TIME: 09:09:26

Input Set : **A:\PTO.RJ.txt**
Output Set: **N:\CRF4\11092006\J807755A.raw**

```
   4 <110> APPLICANT: Robbins, Paul D.
   5        Mai, Jeffrey C.
   7 <120> TITLE OF INVENTION: A COMPACT SYNTHETIC EXPRESSION VECTOR COMPRISING DOUBLE-
STRANDED DNA
   8        MOLECULES AND METHODS OF USE THEREOF
  10 <130> FILE REFERENCE: AP35518 (072396.0263)
  12 <140> CURRENT APPLICATION NUMBER: 10/807,755A
  13 <141> CURRENT FILING DATE: 2004-03-24
  15 <150> PRIOR APPLICATION NUMBER: 60/456,989
  16 <151> PRIOR FILING DATE: 2003-03-24
  18 <160> NUMBER OF SEQ ID NOS: 52
  20 <170> SOFTWARE: FastSEQ for Windows Version 4.0
  22 <210> SEQ ID NO: 1
  23 <211> LENGTH: 51
  24 <212> TYPE: DNA
  25 <213> ORGANISM: Artificial Sequence
  27 <220> FEATURE:
  28 <223> OTHER INFORMATION: synthetic oligonucleotide
  30 <400> SEQUENCE: 1
  31 gcaagcugac ccugaaguuc uucaagagag aacuucaggg ucagcuugcu u          51
  33 <210> SEQ ID NO: 2
  34 <211> LENGTH: 22
  35 <212> TYPE: DNA
  36 <213> ORGANISM: Artificial Sequence
  38 <220> FEATURE:
  39 <223> OTHER INFORMATION: synthetic oligonucleotide
  41 <400> SEQUENCE: 2
  42 gcaagcugac ccugaaguuc uu                                          22
  44 <210> SEQ ID NO: 3
  45 <211> LENGTH: 22
  46 <212> TYPE: DNA
  47 <213> ORGANISM: Artificial Sequence
  49 <220> FEATURE:
  50 <223> OTHER INFORMATION: synthetic oligonucleotide
  52 <400> SEQUENCE: 3
  53 gaacuucagg gucagcuugc uu                                          22
  55 <210> SEQ ID NO: 4
  56 <211> LENGTH: 156
  57 <212> TYPE: DNA
  58 <213> ORGANISM: Artificial Sequence
  60 <220> FEATURE:
  61 <223> OTHER INFORMATION: synthetic oligonucleotide
  63 <400> SEQUENCE: 4
  64 aatatttgca tgtcgctatg tgttctggga aatcaccata aacgtgaaat gtctttggat 60
```

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```
65 ttgggaatct tataagttct gtatgagacc acagatcccc gcaagctgac cctgaagttc 120
66 ttcaagagag aacttcaggg tcagcttgct ttttgg                          156
68 <210> SEQ ID NO: 5
69 <211> LENGTH: 12
70 <212> TYPE: DNA
71 <213> ORGANISM: Artificial Sequence
73 <220> FEATURE:
74 <223> OTHER INFORMATION: synthetic oligonucleotide
76 <400> SEQUENCE: 5
77 gtggcgcagc gg                                                      12
79 <210> SEQ ID NO: 6
80 <211> LENGTH: 11
81 <212> TYPE: DNA
82 <213> ORGANISM: Artificial Sequence
84 <220> FEATURE:
85 <223> OTHER INFORMATION: synthetic oligonucleotide
87 <400> SEQUENCE: 6
88 ggatcgaaac c                                                       11
90 <210> SEQ ID NO: 7
91 <211> LENGTH: 28
92 <212> TYPE: DNA
93 <213> ORGANISM: Artificial Sequence
95 <220> FEATURE:
96 <223> OTHER INFORMATION: synthetic oligonucleotide
98 <400> SEQUENCE: 7
99 tttttttata tatacaggag gccgaggc                                    28
101 <210> SEQ ID NO: 8
102 <211> LENGTH: 16
103 <212> TYPE: PRT
104 <213> ORGANISM: Artificial Sequence
106 <220> FEATURE:
107 <223> OTHER INFORMATION: synthetic polypeptide
109 <400> SEQUENCE: 8
110 Cys Gly Ser Asp Ala Leu Asp Asp Phe Asp Leu Asp Met Leu Gly Ser
111  1               5               10                  15
114 <210> SEQ ID NO: 9
115 <211> LENGTH: 29
116 <212> TYPE: PRT
117 <213> ORGANISM: Artificial Sequence
119 <220> FEATURE:
120 <223> OTHER INFORMATION: synthetic polypeptide
122 <400> SEQUENCE: 9
123 Cys Gly Ser Asp Ala Leu Asp Asp Phe Asp Leu Asp Met Leu Gly Ser
124  1               5               10                  15
125 Asp Ala Leu Asp Asp Phe Asp Leu Asp Met Leu Gly Ser
126             20                  25
129 <210> SEQ ID NO: 10
130 <211> LENGTH: 15
131 <212> TYPE: DNA
```

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```
132 <213> ORGANISM: Artificial Sequence
134 <220> FEATURE:
135 <223> OTHER INFORMATION: synthetic oligonucleotide
137 <400> SEQUENCE: 10
138 aggtcagcat gacct                                              15
140 <210> SEQ ID NO: 11
141 <211> LENGTH: 15
142 <212> TYPE: DNA
143 <213> ORGANISM: Artificial Sequence
145 <220> FEATURE:
146 <223> OTHER INFORMATION: synthetic oligonucleotide
148 <400> SEQUENCE: 11
149 aggtcatatt gacct                                              15
151 <210> SEQ ID NO: 12
152 <211> LENGTH: 20
153 <212> TYPE: DNA
154 <213> ORGANISM: Artificial Sequence
156 <220> FEATURE:
157 <223> OTHER INFORMATION: synthetic oligonucleotide
159 <400> SEQUENCE: 12
160 gtgcttgctt tggtagcaca                                         20
162 <210> SEQ ID NO: 13
163 <211> LENGTH: 14
164 <212> TYPE: DNA
165 <213> ORGANISM: Artificial Sequence
167 <220> FEATURE:
168 <223> OTHER INFORMATION: synthetic oligonucleotide
170 <400> SEQUENCE: 13
171 aagattagca cagt                                               14
173 <210> SEQ ID NO: 14
174 <211> LENGTH: 62
175 <212> TYPE: DNA
176 <213> ORGANISM: Artificial Sequence
178 <220> FEATURE:
179 <223> OTHER INFORMATION: synthetic oligonucleotide
181 <400> SEQUENCE: 14
182 gaatcttata agttctgtat gagaccacag atccccgtgc ttgctttggt agcacaagca 60
183 tt                                                            62
185 <210> SEQ ID NO: 15
186 <211> LENGTH: 59
187 <212> TYPE: DNA
188 <213> ORGANISM: Artificial Sequence
190 <220> FEATURE:
191 <223> OTHER INFORMATION: synthetic oligonucleotide
193 <400> SEQUENCE: 15
194 tttttcgata acatcttcga ccacctgaca cgattagaag gtggtcggag atgttgtcg  59
196 <210> SEQ ID NO: 16
197 <211> LENGTH: 82
198 <212> TYPE: DNA
```

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```
199 <213> ORGANISM: Artificial Sequence
201 <220> FEATURE:
202 <223> OTHER INFORMATION: synthetic oligonucleotide
204 <400> SEQUENCE: 16
205 gugcuugcuu ugguagcaca agcauugcug uuguagaggc ugguggaaga uuagcacagu 60
206 ccaccagcuu cuacaauagc uu                                       82
208 <210> SEQ ID NO: 17
209 <211> LENGTH: 22
210 <212> TYPE: DNA
211 <213> ORGANISM: Artificial Sequence
213 <220> FEATURE:
214 <223> OTHER INFORMATION: synthetic oligonucleotide
216 <400> SEQUENCE: 17
217 gcuguuguag aggcuggugg aa                                       22
219 <210> SEQ ID NO: 18
220 <211> LENGTH: 22
221 <212> TYPE: DNA
222 <213> ORGANISM: Artificial Sequence
224 <220> FEATURE:
225 <223> OTHER INFORMATION: synthetic oligonucleotide
227 <400> SEQUENCE: 18
228 ccaccagcuu cuacaauagc uu                                       22
230 <210> SEQ ID NO: 19
231 <211> LENGTH: 36
232 <212> TYPE: DNA
233 <213> ORGANISM: Artificial Sequence
235 <220> FEATURE:
236 <223> OTHER INFORMATION: synthetic oligonucleotide
238 <400> SEQUENCE: 19
239 cctcaaatgg tctccaattt tcctttggca aattcc                        36
241 <210> SEQ ID NO: 20
242 <211> LENGTH: 100
243 <212> TYPE: DNA
244 <213> ORGANISM: Artificial Sequence
246 <220> FEATURE:
247 <223> OTHER INFORMATION: synthetic oligonucleotide
249 <400> SEQUENCE: 20
250 aatatttgca tgtcgctatg tgttctggga aatcaccata aacgtgaaat gtctttggat 60
251 ttgggaatct tataagttct gtatgagacc acagatcccc                    100
253 <210> SEQ ID NO: 21
254 <211> LENGTH: 100
255 <212> TYPE: DNA
256 <213> ORGANISM: Artificial Sequence
258 <220> FEATURE:
259 <223> OTHER INFORMATION: synthetic oligonucleotide
261 <400> SEQUENCE: 21
262 aatatttgca tgtcgctatg tgttctggga aatcaccata aacgtgaaat gtctttggat 60
263 ttgggaatct tataagttct gtatgagacc actctttccc                    100
265 <210> SEQ ID NO: 22
```

RAW SEQUENCE LISTING   DATE: 11/09/2006
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          Input Set : **A:\PTO.RJ.txt**
          Output Set: **N:\CRF4\11092006\J807755A.raw**

```
266 <211> LENGTH: 68
267 <212> TYPE: DNA
268 <213> ORGANISM: Artificial Sequence
270 <220> FEATURE:
271 <223> OTHER INFORMATION: synthetic oligonucleotide
273 <400> SEQUENCE: 22
274 tcaccataaa cgtgaaatgt ctttggattt gggaatctta taagttctgt atgagaccac 60
275 tctttccc                                                          68
277 <210> SEQ ID NO: 23
278 <211> LENGTH: 135
279 <212> TYPE: DNA
280 <213> ORGANISM: Artificial Sequence
282 <220> FEATURE:
283 <221> NAME/KEY: misc_feature
284 <222> LOCATION: (71)...(89)
285 <223> OTHER INFORMATION: n = A,T,C or G
287 <221> NAME/KEY: misc_feature
288 <222> LOCATION: (93)...(111)
289 <223> OTHER INFORMATION: n = A,T,C or G
291 <223> OTHER INFORMATION: synthetic oligonucleotide
```
W--> `293 <400> 23`
```
294 caggactagt cttttaggtc aaaaagaaga agctttgtaa ccgttggaaa acgtagtgta 60
```
W--> `295 gtggttacac nnnnnnnnnn nnnnnnnnna tgnnnnnnnn nnnnnnnnnn nttcggttcg 120`
```
296 aaaccgggcg ttttt                                                 135
298 <210> SEQ ID NO: 24
299 <211> LENGTH: 190
300 <212> TYPE: DNA
301 <213> ORGANISM: Artificial Sequence
303 <220> FEATURE:
304 <221> NAME/KEY: misc_feature
305 <222> LOCATION: (75)...(93)
306 <223> OTHER INFORMATION: n = A,T,C or G
308 <221> NAME/KEY: misc_feature
309 <222> LOCATION: (97)...(115)
310 <223> OTHER INFORMATION: n = A,T,C or G
312 <223> OTHER INFORMATION: synthetic oligonucleotide
```
W--> `314 <400> 24`
```
315 aattcaggac tagtctttta ggtcaaaaag aagaagcttt gtaaccgttg gaaaacgtag 60
```
W--> `316 tgtagtggtt acacnnnnnn nnnnnnnnnn nnnatgnnnn nnnnnnnnnn nnnnnttcgg 120`
```
317 ttcgaaaccg ggcgtttttta aagagagtcg cttttttttc tatcgctaat tctgtttttg 180
318 agtattttca                                                       190
320 <210> SEQ ID NO: 25
321 <211> LENGTH: 135
322 <212> TYPE: DNA
323 <213> ORGANISM: Artificial Sequence
325 <220> FEATURE:
326 <221> NAME/KEY: misc_feature
327 <222> LOCATION: (71)...(89)
328 <223> OTHER INFORMATION: n = A,T,C or G
```

RAW SEQUENCE LISTING ERROR SUMMARY   DATE: 11/09/2006
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Input Set : **A:\PTO.RJ.txt**
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Please Note:
Use of n and/or Xaa have been detected in the Sequence Listing. Please review the
Sequence Listing to ensure that a corresponding explanation is presented in the <220>
to <223> fields of each sequence which presents at least one n or Xaa.

```
Seq#:23;  N  Pos.  71,72,73,74,75,76,77,78,79,80,81,82,83,84,85,86,87,88,89,93
Seq#:23;  N  Pos.  94,95,96,97,98,99,100,101,102,103,104,105,106,107,108,109
Seq#:23;  N  Pos.  110,111
Seq#:24;  N  Pos.  75,76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91,92,93,97
Seq#:24;  N  Pos.  98,99,100,101,102,103,104,105,106,107,108,109,110,111,112
Seq#:24;  N  Pos.  113,114,115
Seq#:25;  N  Pos.  71,72,73,74,75,76,77,78,79,80,81,82,83,84,85,86,87,88,89
Seq#:25;  N  Pos.  101,102,103,104,105,106,107,108,109,110,111,112,113,114,115
Seq#:25;  N  Pos.  116,117,118,119
Seq#:26;  N  Pos.  71,72,73,74,75,76,77,78,79,80,81,82,83,84,85,86,87,88,89
Seq#:26;  N  Pos.  101,102,103,104,105,106,107,108,109,110,111,112,113,114,115
Seq#:26;  N  Pos.  116,117,118,119
Seq#:27;  N  Pos.  66,67,68,69,70,71,72,73,74,75,76,77,78,79,80,81,82,83,84,95
Seq#:27;  N  Pos.  96,97,98,99,100,101,102,103,104,105,106,107,108,109,110,111
Seq#:27;  N  Pos.  112,113
Seq#:28;  N  Pos.  70,71,72,73,74,75,76,77,78,79,80,81,82,83,84,85,86,87,88,99
Seq#:28;  N  Pos.  100,101,102,103,104,105,106,107,108,109,110,111,112,113,114
Seq#:28;  N  Pos.  115,116,117
Seq#:29;  N  Pos.  79,80,81,82,83,84,85,86,87,88,89,90,91,92,93,94,95,96,97
Seq#:29;  N  Pos.  112,113,114,115,116,117,118,119,120,121,122,123,124,125,126
Seq#:29;  N  Pos.  127,128,129,130
Seq#:30;  N  Pos.  94,95,96,97,98,99,100,101,102,103,104,105,106,107,108,109
Seq#:30;  N  Pos.  110,111,112,127,128,129,130,131,132,133,134,135,136,137,138
Seq#:30;  N  Pos.  139,140,141,142,143,144,145
Seq#:31;  N  Pos.  86,87,88,89,90,91,92,93,94,95,96,97,98,99,100,101,102,103
Seq#:31;  N  Pos.  104,115,116,117,118,119,120,121,122,123,124,125,126,127,128
Seq#:31;  N  Pos.  129,130,131,132,133
Seq#:32;  N  Pos.  106,107,108,109,110,111,112,113,114,115,116,117,118,119,120
Seq#:32;  N  Pos.  121,122,123,124,135,136,137,138,139,140,141,142,143,144,145
Seq#:32;  N  Pos.  146,147,148,149,150,151,152,153
Seq#:33;  N  Pos.  83,84,85,86,87,88,89,90,91,92,93,94,95,96,97,98,99,100,101
Seq#:33;  N  Pos.  112,113,114,115,116,117,118,119,120,121,122,123,124,125,126
Seq#:33;  N  Pos.  127,128,129,130
Seq#:34;  N  Pos.  101,102,103,104,105,106,107,108,109,110,111,112,113,114,115
Seq#:34;  N  Pos.  116,117,118,119,130,131,132,133,134,135,136,137,138,139,140
Seq#:34;  N  Pos.  141,142,143,144,145,146,147,148
Seq#:47;  N  Pos.  106,107,108,109,110,111,112,113,114,115,116,117,118,119,120
Seq#:47;  N  Pos.  121,122,123,124,135,136,137,138,139,140,141,142,143,144,145
Seq#:47;  N  Pos.  146,147,148,149,150,151,152,153
Seq#:48;  N  Pos.  298,299,300,301,302,303,304,305,306,307,308,309,310,311,312
Seq#:48;  N  Pos.  313,314,315,316,327,328,329,330,331,332,333,334,335,336,337
Seq#:48;  N  Pos.  338,339,340,341,342,343,344,345
Seq#:49;  N  Pos.  101,102,103,104,105,106,107,108,109,110,111,112,113,114,115
Seq#:49;  N  Pos.  116,117,118,119,130,131,132,133,134,135,136,137,138,139,140
```

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```
Seq#:49; N Pos. 141,142,143,144,145,146,147,148
Seq#:50; N Pos. 98,99,100,101,102,103,104,105,106,107,108,109,110,111,112
Seq#:50; N Pos. 113,114,115,116
Seq#:51; N Pos. 21,22,23,24,25,26,27,28,29,30,31,32,33,34,35,36,37,38,39,51
Seq#:51; N Pos. 52,53,54,55,56,57,58,59,60,61,62,63,64,65,66,67,68,69
Seq#:52; N Pos. 27,28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43,44,45,60
Seq#:52; N Pos. 61,62,63,64,65,66,67,68,69,70,71,72,73,74,75,76,77,78
```

VERIFICATION SUMMARY   DATE: 11/09/2006
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Input Set : **A:\PTO.RJ.txt**
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```
L:293 M:258 W: Mandatory Feature missing, <220> Tag not found for SEQ ID#:23
L:295 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:23 after pos.:60
L:314 M:258 W: Mandatory Feature missing, <220> Tag not found for SEQ ID#:24
L:316 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:24 after pos.:60
L:336 M:258 W: Mandatory Feature missing, <220> Tag not found for SEQ ID#:25
L:338 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:25 after pos.:60
L:357 M:258 W: Mandatory Feature missing, <220> Tag not found for SEQ ID#:26
L:359 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:26 after pos.:60
L:378 M:258 W: Mandatory Feature missing, <220> Tag not found for SEQ ID#:27
L:380 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:27 after pos.:60
L:399 M:258 W: Mandatory Feature missing, <220> Tag not found for SEQ ID#:28
L:401 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:28 after pos.:60
L:421 M:258 W: Mandatory Feature missing, <220> Tag not found for SEQ ID#:29
L:423 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:29 after pos.:60
M:341 Repeated in SeqNo=29
L:442 M:258 W: Mandatory Feature missing, <220> Tag not found for SEQ ID#:30
L:444 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:30 after pos.:60
M:341 Repeated in SeqNo=30
L:463 M:258 W: Mandatory Feature missing, <220> Tag not found for SEQ ID#:31
L:465 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:31 after pos.:60
M:341 Repeated in SeqNo=31
L:484 M:258 W: Mandatory Feature missing, <220> Tag not found for SEQ ID#:32
L:486 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:32 after pos.:60
M:341 Repeated in SeqNo=32
L:505 M:258 W: Mandatory Feature missing, <220> Tag not found for SEQ ID#:33
L:507 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:33 after pos.:60
M:341 Repeated in SeqNo=33
L:526 M:258 W: Mandatory Feature missing, <220> Tag not found for SEQ ID#:34
L:528 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:34 after pos.:60
M:341 Repeated in SeqNo=34
L:685 M:258 W: Mandatory Feature missing, <220> Tag not found for SEQ ID#:47
L:687 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:47 after pos.:60
M:341 Repeated in SeqNo=47
L:706 M:258 W: Mandatory Feature missing, <220> Tag not found for SEQ ID#:48
L:711 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:48 after pos.:240
M:341 Repeated in SeqNo=48
L:730 M:258 W: Mandatory Feature missing, <220> Tag not found for SEQ ID#:49
L:732 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:49 after pos.:60
M:341 Repeated in SeqNo=49
L:747 M:258 W: Mandatory Feature missing, <220> Tag not found for SEQ ID#:50
L:749 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:50 after pos.:60
L:766 M:258 W: Mandatory Feature missing, <220> Tag not found for SEQ ID#:51
L:767 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:51 after pos.:0
M:341 Repeated in SeqNo=51
L:784 M:258 W: Mandatory Feature missing, <220> Tag not found for SEQ ID#:52
L:785 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:52 after pos.:0
M:341 Repeated in SeqNo=52
```